

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number  
**WO 2004/086560 A2**

(51) International Patent Classification<sup>7</sup>: **H01Q 9/28**,  
1/00, G01N 21/00

10 St. Peter's Road, Coton, Cambridge CB3 7PR (GB).  
**DAVIS, Alexander, Giles** [GB/GB]; 3 The Crescent, Adel,  
Leeds, Yorkshire, LS16 6AA (GB).

(21) International Application Number:  
PCT/GB2004/001261

(74) Agents: **MARTIN, Phillip, John** et al.; Marks & Clerk,  
66-68 Hills Road, Cambridge, Cambridgeshire CB2 1LA  
(GB).

(22) International Filing Date: 24 March 2004 (24.03.2004)

(25) Filing Language: English

(81) Designated States (*unless otherwise indicated, for every  
kind of national protection available*): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(26) Publication Language: English

(30) Priority Data:  
0307096.8 27 March 2003 (27.03.2003) GB

(71) Applicants (*for all designated States except US*): **CAM-  
BRIDGE UNIVERSITY TECHNICAL SERVICES  
LIMITED** [GB/GB]; 16 Mill Lane, Cambridge, Cam-  
bridgeshire, CB2 1SB (GB). **THE UNIVERSITY OF  
LEEDS** [GB/GB]; Leeds, Yorkshire LS2 9JT (GB).

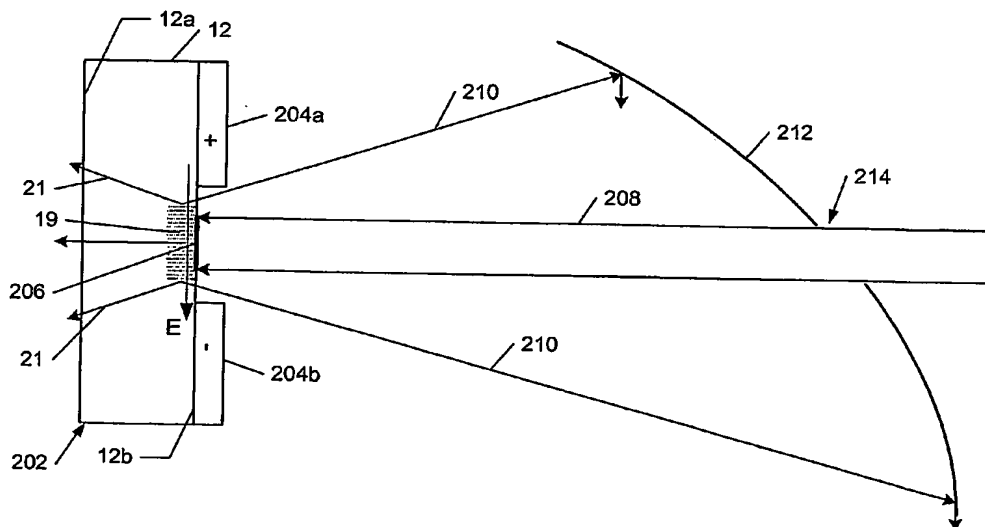
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **SHEN, Yao-chun**  
[CN/GB]; 17 maio Road, Cambridge, cambridgeshire,  
CB4 2GA (GB). **LINFIELD, Edmund, Harold** [GB/GB];

(84) Designated States (*unless otherwise indicated, for every  
kind of regional protection available*): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

[Continued on next page]

(54) Title: TERAHERTZ RADIATION SOURCES AND METHODS



(57) Abstract: The invention relates to improved terahertz radiation sources and associated methods. A terahertz radiation source is described, comprising: an emitter (202) comprising a semiconductor material (12); a pair of electrodes (204a,b) adjacent a face of said semiconductor, said pair of electrodes defining a gap between said electrodes; a pulsed light source input for illuminating said semiconductor to excite photo-carriers in said semiconductor to generate terahertz radiation; and a radiation collector (212) to collect said terahertz radiation; and wherein said radiation collector is disposed on the same side of said semiconductor as said electrodes. A related method of providing terahertz radiation is also described.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *without international search report and to be republished upon receipt of that report*